ENGLISH

Z10-3 edition 1
Code: 001.211
001.212
001.217
001.216

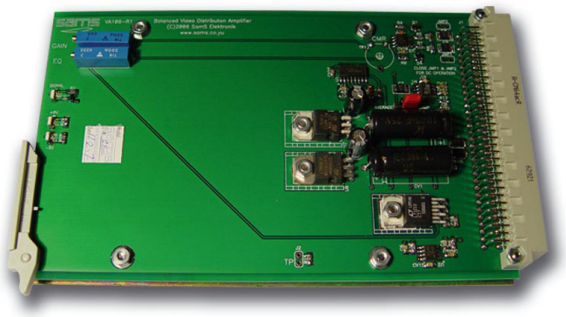
VA-106(c)
VA-104(c)

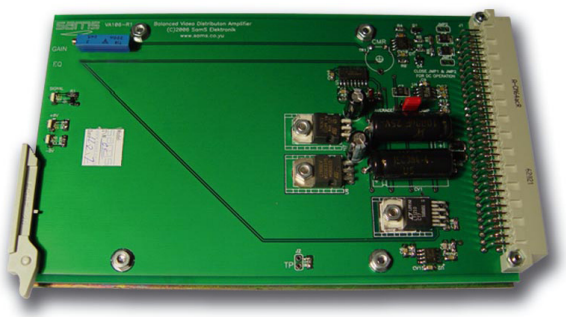
Analog video distribution amplifier
1x6 / 1x4
- for SRU rack frame

USER MANUAL FOR USE AND MAINTENANCE

Read the instructions before using the device.

Keep this manual for periodic usage.





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WARRANTY

Dear User,
Thank you very much for purchasing our product.
Your purchase is a wise investment. The equipment you have purchased is manufactured with great care from high-quality parts and materials. It is designed to fully meet the needs according to specifications, if properly installed, used and maintained according to the enclosed instructions.

Any technical failure or deficiency that occurs during the warranty period specified on the invoice of the purchased equipment will be inspected and serviced by Sams elektronik doo or an authorized service center of the manufacturer, with the conditions set out in the warranty statement.

THIS DEVICE IS INTENDED FOR PROFESSIONAL USE.

WARRANTY STATEMENT

1. Product has declared characteristics. Within the warranty period, manufacturer ensures the removal of technical failures, product defects or replacement of products if declared characteristics of the product are changed.
2. If the goods are not delivered as specified with the contract, the consumer has the right to request from the manufacturer / service provider to eliminate the lack of conformity, without charge, repair or replacement, or to request an appropriate price reduction or terminate the contract.
3. Any repair or replacement must be made within a reasonable time without significant inconvenience to the consumer, taking into account the nature and the purpose for which the consumer has purchased the product.
4. The consumer has the right to terminate the contract, if he can realize the right to repair or replacement, or if the manufacturer / servicer has not completed repair or replacement within a reasonable time or if the manufacturer / servicer did not perform repair or replacement without significant inconvenience to the consumer.
5. The consumer may not terminate the contract if the lack of conformity of the product is negligible.
6. The product will function properly when used in accordance with the user manual.
7. Period of servicing the product is 6 years from the launch on the market.

The product purchased outside the territory of Serbia does not fall under the terms of this warranty, only to 1 year factory warranty from date of purchase.

TERMS OF WARRANTY

1. The warranty period begins on the date of sale referred in the invoice.
2. The buyer loses the right to warranty if the defect cause failure from not following the user manual instructions, improper installation, comes to mechanical damage during use, repairs and modifications by unauthorized persons, installation of non-genuine spare parts, and if the buyer does not comply with all warnings listed in the user manual.
3. The warranty is voided if the device is damaged during the disturbances from the environment, natural disasters (floods, hail, etc.), suffered an electric shock or lightning strike.

IMPORTANT NOTES

1. Be sure to thoroughly read the user manual.
   If you have any doubts about the instructions, contact the technical support of the manufacturer.
2. Before contacting for technical help, please make sure that are provided with all necessary conditions for normal operation.
3. If the malfunction or defect in the device does not eliminate within a reasonable time from the date of failure, the warranty period shall be extended for as many days as the unit is in service.
4. For all maintenance interventions shall solely be authorized services listed in this Warranty Certificate.

SAFETY WARNINGS FOR SRU RACK FRAME

IMPORTANT SAFEY

WARNING

TO AVOID RISK OF FIRE OR ELECTRIC SHOCK
DO NOT EXPOSE THE UNIT TO MOISTURE OR RAIN

The symbol "lightning in a triangle" is to alert the user to the presence of high voltage. In poor conditions the user may be exposed to shock.

The symbol "exclamation mark in a triangle" is to alert the user to comply by the terms of use in user's manual, which is supplied with the device.

CLASS I DEVICE
Grounding is connected to the chassis of the device.
The power supply is protected with fuse against overload.

DECLARATION OF CONFORMITY for product:
SRU RACK FRAME WITH POWER SUPPLY (PSU-212) WITH CORRESPONDING MODULES AND BACK CONNECTORS
The product is designed and manufactured according to the following regulations:

- Electromagnetic Compatibility Directive (EMC)
- Low Voltage Directive (ELV)

Documentation confirming statements can be obtained on written request for review.

WARNING

TO AVOID ELECTRIC SHOCK, DO NOT OPEN COVER.
DEVICE MAINTENANCE REQUIRES PROFESSIONAL PERSON AUTHORIZED BY THE MANUFACTURER.

1. Read all safety and operating instructions before using the device.
2. Keep all safety and operating instructions.
3. Follow the instructions from the user manual.
4. Do not upgrade device, except in the case advised by the manufacturer.
5. Do not use the device in the presence of water and / or moisture.
6. Do not pour water or moisten the device with any type of liquid.
7. Openings on device are provided for ventilation.
8. Do not block air flow through the ventilation openings.
9. This product is powered by AC ~ 230V ± 10%, 50Hz.
10. This product is equipped with a three-wire cord with grounding.
11. This device is equipped with a protective fuse in the power outlet. Do not bypass fuse.
12. Do not replace the fuse. Replacement can be made by a person authorized by the manufacturer.
13. Do not bend the power cord so that it can be damaged.
14. Connect connectors as in the enclosed instructions. Deviations from the allowed values predicted for the inputs and outputs of the device can cause severe damage and warranty void.
15. Do not use the device in an environment that contains flammable or explosive materials in any physical state.
16. Turn off the power corde before cleaning. Do not use liquid, aerosol or flammable cleaners. Use only a dry cloth.
17. Servicing is performed by a qualified person. Removing the cover user is exposed to high voltages.
18. Never use the device when the cover is open and the device is powered on.
19. Do not expose to extreme high or low temperatures.
20. Do not expose to sudden temperature changes.
21. Call service in the following cases:
    - The power cord or plug is damaged
    - Liquid or foreign objects is inside the device
    - The machine is exposed to water and moisture
    - The device does not function according to specification
    - The unit has been dropped or damaged
    - The characteristics are significantly changed
22. Use only specified replacement parts.
23. Professional person authorized by the manufacturer must check the device after completion of service.
24. Allow a free rack unit (1RU) above and below the device for ventilation or put rack fan under the device.

Pictures and drawings listed in this user manual are for information purposes only and may differ from the actual device. Design and specifications of the device may change without prior notice.

TECHNICAL SUPPORT AND SERVICE

Sams elektronik has made every effort to ensure that the equipment works in perfect condition. In the event that problems that occur can not be resolved, or if you have any questions regarding this equipment or information about other products produced from Sams elektronik, contact your local sales representative or call Sams elektronik directly through one of the ways listed below:

Sales: +381 11 3806 254
Technical support: +381 11 2402 212
Service: +381 11 4056 051
Email:
Sales - sasa@sams.rs
Technical support and service - sams@sams.rs

Web site: www.sams.rs

Address:
SAMS ELEKTRONIK d.o.o.
48 Zivka Davidovica st
11050 Belgrade
Serbia

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UNPACKING AND INSTALLATION

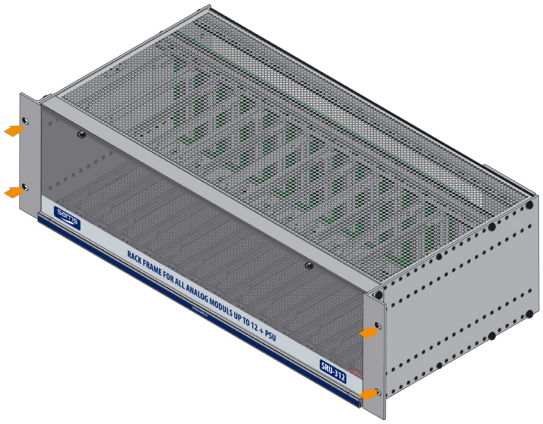
The box contains:

- Module
- Back connector (optional)
- Protective pad for SRU rack frame (optional)
- M2.5x6/7985 screw (optional)
- SRU rack frame (optional)
- Power corde for SRU rack frame (optional)
- User manual (optional)

Before use, check the contents of the box. For any deficiency report to the seller or the manufacturer of the product.
DEVICE IS INSULATED BY PROTECTIVE WRAP AND PACKED IN A CARDBOARD BOX.
DEVICE IS SENSITIVE TO SHAKES AND DROPS. HANDLE WITH CARE DURING TRANSPORT AND ASSEMBLY.
Check if the product is damaged during transport.

PROCEDURES FOR SAFE USE OF THE DEVICE:

1. - If the device is not supplied with SRU rack frame, remove the protective wrap from the device. If the device is supplied with SRU rack frame, remove the protective wrap from the chassis.
   - For devices that are AC 230V / 50Hz powered, the device is supplied with power cord.
   - Use only power corde that comes with the device.
2. SRU rack frame is mounted in a 19" special-purpose rack cabinets designed for this type of device. Screw device with four screws. Screws for fastening are not supplied with the device.
3. The device must be connected to ground. A device that is not connected to the grounding does not function properly according to factory declarations and can cause adverse effects on users and other equipment.
4. Strictly comply to all steps for proper connection of devices in the system.
5. On the SRU rack frame are 3 types of mass (CHASSIS, MAINS and 0V). The factory, all three are connected. According to the user's needs, the masses can be switched over between them.



Places for fastening

MAINTENANCE

The system maintains only person authorized by Sams elektronik doo.
Any voluntarily opening device, upgrading or servicing is strictly prohibited and is subject to warranty void, and the possibility of injury.

REMOVAL AND STORAGE

1. Before dismantling the device, switch off the power, remove the power cord and remove all other connectors.
2. Remove the four screws for fastening.
3. Remove the device from rack cabinet.
4. Wrap the machine in the foil to protect it from dust. Package it in a box.
5. The device must be stored in a room without moisture.

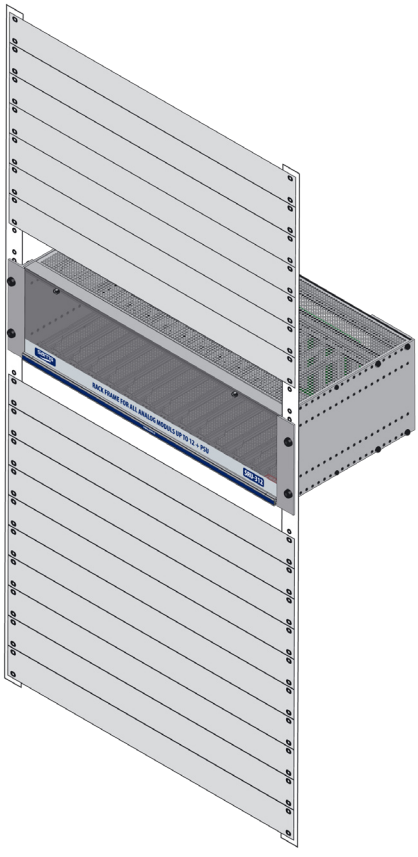
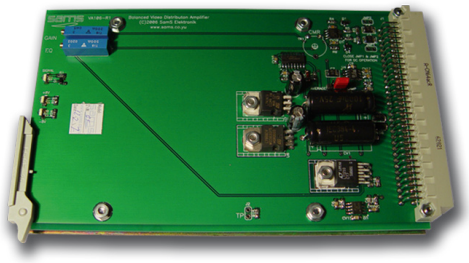


Illustration - mounted device

DESCRIPTION

VA-106c



Analog video distribution amplifier with EQ 1x6

- High quality
- Differential input
- 30 MHz bandwidth
- Selectable black level clamp
- Cable equalization for up to 300m at 8 MHz
- Gain range ±3dB
- 6 outputs
- Jumper select AC or DC
- Led indication of presence of input video signal
- Compositee / Component video or reference distribution

The VA-106c will provides hum removal and equalization for long cable runs of up to 300m. The VA-106c features 30MHz bandwidth, differential input and variable equalization for up to 300m (1000ft) of Belden 8281 coaxial cable. The VA-106c is also suitable for use in analog component or composite distribution (jumper select). The modules mount into the SRU-112 frames 3RU, 12 module capacity.

TECHNICAL SPECIFICATIONS

Specifications and designs are subject to change without notice

GENERAL INFORMATION

- Code: 001.211
- Weight: ..... 0.4 Kg
- Type: ..... module
- Dimensions: ..... 100 x 160mm
- Required: ..... SRU rack frame, back panel CV-6
- Delivery includes:. device, user manual, rear panel (optional)

INPUT

-Video Input Level: ..... 1V p-p nominal
-Input Impedance: ..... 75Ω loop-trough, differential
-Coupling: ..... AC/DC jumper selectable

OUTPUT

-Number: ..... 6, BNC
-Level: ..... 1V p-p nominal
-Impedance: 75Ω

PERFORMANCE

- Gain: ..... -3dB do +3dB
- Gain stability: ..... <±0.1dB
- Frequency response: ..... ±0.1dB (50Hz do 8MHz)
- Equalization range: ..... 0-300m, Belden 8281
- Clamping accuracy: ..... <±30mV

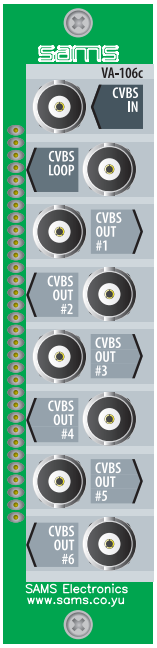
POWER

- Voltage: ..... 2 x 12V AC
- Power: 4W

TEMPERATURE

- Performance: ..... 5-40°C
- Operating: ..... 0-50°C

BACK CONNECTOR CV-6



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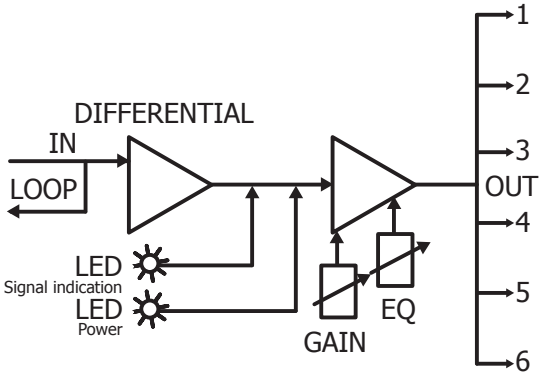
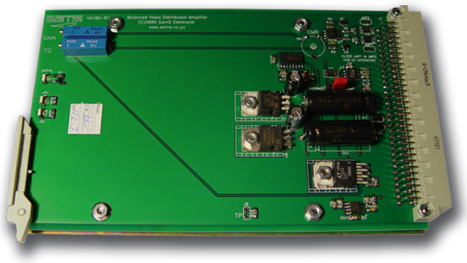


ORDERING INFORMATION

Code	Name	Description
001.211	VA-106c	Analog video DA 1x6
001.502	CV-6	Back connector
001.600	SRU-312	Rack frame for 12 modules
001.601	SRU-310	Rack frame for 10 modules
001.605	SRU-306	Rack frame for 6 modules

VA-104c



Analog video distribution amplifier with EQ 1x4

- High quality
- Differential input
- 30 MHz bandwidth
- Selectable black level clamp
- Cable equalization for up to 300m at 8 MHz
- Gain range ±3dB
- 4 outputs
- Jumper select AC or DC
- Led indication of presence of input video signal
- Compositee / Component video or reference distribution

The VA-104c will provides hum removal and equalization for long cable runs of up to 300m. The VA-104c features 30MHz bandwidth, differential input and variable equalization for up to 300m (1000ft) of Belden 8281 coaxial cable. The VA-104c is also suitable for use in analog component or composite distribution (jumper select). The modules mount into the SRU-112 frames 3RU, 12 module capacity.

TECHNICAL SPECIFICATIONS

Specifications and designs are subject to change without notice

GENERAL INFORMATION

- Code: 001.217
- Weight: ..... 0.4 Kg
- Type: ..... module
- Dimensions: ..... 100 x 160mm
- Required: ..... SRU rack frame, back panel CV-6
- Delivery includes:. device, user manual, rear panel (optional)

INPUT

-Video Input Level: ..... 1V p-p nominal
-Input Impedance: ..... 75Ω loop-trough, differential
-Coupling: ..... AC/DC jumper selectable

OUTPUT

-Number: ..... 4, BNC
-Level: ..... 1V p-p nominal
-Impedance: 75Ω

PERFORMANCE

- Gain: ..... -3dB do +3dB
  - Gain stability: <±0.1dB
- Frequency response: ..... ±0.1dB (50Hz do 8MHz)
- Equalization range: ..... 0-300m, Belden 8281
- Clamping accuracy: ..... <±30mV

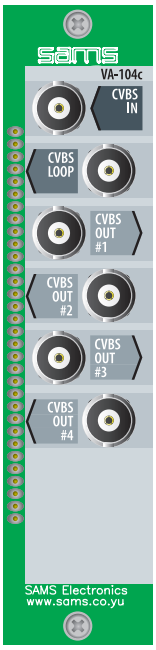
POWER

- Voltage: ..... 2 x 12V AC
- Power: 4W

TEMPERATURE

- Performance: ..... 5-40°C
- Operating: ..... 0-50°C

BACK CONNECTOR CV-6



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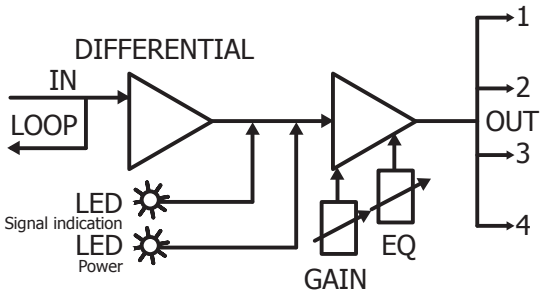
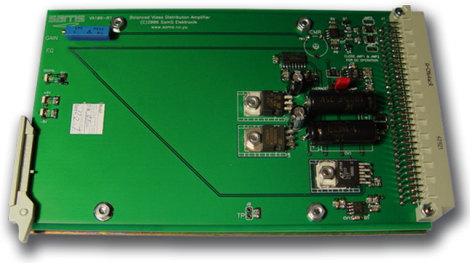


ORDERING INFORMATION

Code	Name	Description
001.217	VA-104c	Analog video DA 1x4
001.502	CV-6	Back connector
001.600	SRU-312	Rack frame for 12 modules
001.601	SRU-310	Rack frame for 10 modules
001.605	SRU-306	Rack frame for 6 modules

VA-106

Analog video distribution amplifier 1x6



- High quality
- Differential input
- 30 MHz bandwidth
- Gain range ±3dB
- 6 outputs
- Jumper select AC or DC
- Compositee / Component video

The VA-106 will provides hum removal and equalization for long cable runs of up to 30m. The VA-106 features 30MHz bandwidth, differential input. The VA-106 is also suitable for use in analog component or composite distribution (jumper select). The modules mount into the SRU-112 frames 3RU, 12 module capacity.

TECHNICAL SPECIFICATIONS

Specifications and designs are subject to change without notice

GENERAL INFORMATION

- Code: 001.212
- Weight: ..... 0.4 Kg
- Type: ..... module
- Dimensions: ..... 100 x 160mm
- Required: ..... SRU rack frame, back panel CV-6
- Delivery includes:. device, user manual, rear panel (optional)

INPUT

-Video Input Level: ..... 1V p-p nominal
-Input Impedance: ..... 75Ω loop-trough, differential
-Coupling: ..... AC/DC jumper selectable

OUTPUT

- Number: ..... 6, BNC
- Level: ..... 1V p-p nominal
- Impedance: 75Ω
- Isolation: ..... >30dB na 5.5MHz
- Hum on output: ..... >1mV p-p

PERFORMANCE

- Gain: ..... -3dB do +3dB
- Gain stability: ..... <±0.1dB
- Frequency response: ..... ±0.1dB (50Hz do 8MHz)

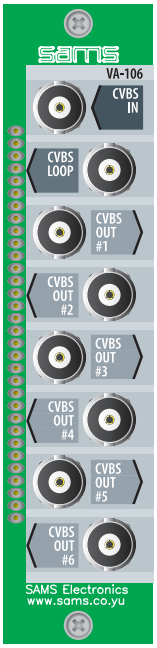
POWER

- Voltage: ..... 2 x 12V AC
- Power: 4W

TEMPERATURE

- Performance: ..... 5-40°C
- Operating: ..... 0-50°C

BACK CONNECTOR CV-6



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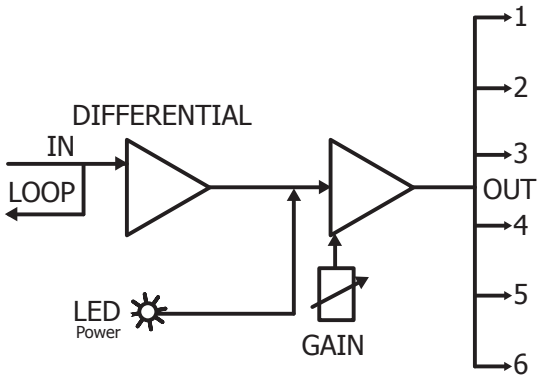
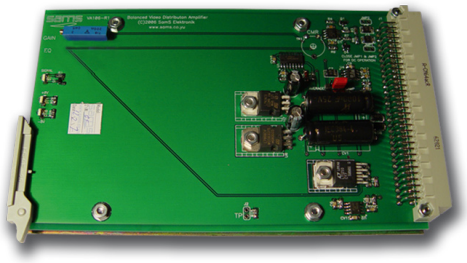


ORDERING INFORMATION

Code	Name	Description
001.212	VA-106	Analog video DA 1x6
001.502	CV-6	Back connector
001.600	SRU-312	Rack frame for 12 modules
001.601	SRU-310	Rack frame for 10 modules
001.605	SRU-306	Rack frame for 6 modules

VA-104

Analog video distribution amplifier 1x4



- High quality
- Differential input
- 30 MHz bandwidth
- Gain range ±3dB
- 4 outputs
- Jumper select AC or DC
- Compositee / Component video

The VA-104 will provides hum removal and equalization for long cable runs of up to 30m. The VA-104 features 30MHz bandwidth, differential input. The VA-104 is also suitable for use in analog component or composite distribution (jumper select). The modules mount into the SRU-112 frames 3RU, 12 module capacity.

TECHNICAL SPECIFICATIONS

Specifications and designs are subject to change without notice

GENERAL INFORMATION

- Code: 001.216
- Weight: ..... 0.4 Kg
- Type: ..... module
- Dimensions: ..... 100 x 160mm
- Required: ..... SRU rack frame, back panel CV-6
- Delivery includes:. device, user manual, rear panel (optional)

INPUT

-Video Input Level: ..... 1V p-p nominal
-Input Impedance: ..... 75Ω loop-trough, differential
-Coupling: ..... AC/DC jumper selectable

OUTPUT

- Number: ..... 4, BNC
- Level: ..... 1V p-p nominal
- Impedance: 75Ω
- Isolation: ..... >30dB na 5.5MHz
- Hum on output: ..... >1mV p-p

PERFORMANCE

- Gain: ..... -3dB do +3dB
  - Gain stability: <±0.1dB
- Frequency response: ..... ±0.1dB (50Hz do 8MHz)

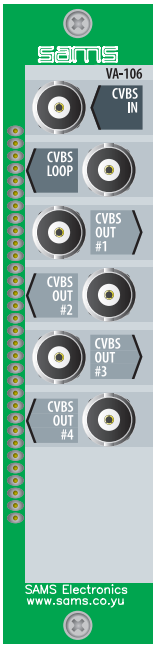
POWER

- Voltage: ..... 2 x 12V AC
- Power: 4W

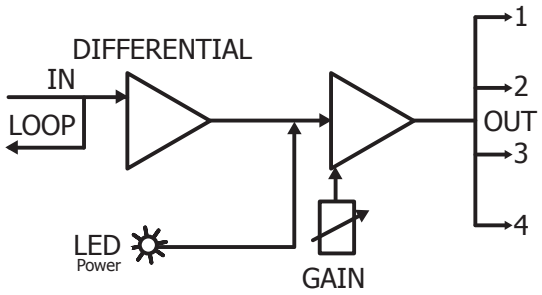
TEMPERATURE

- Performance: ..... 5-40°C
- Operating: ..... 0-50°C

BACK CONNECTOR CV-6



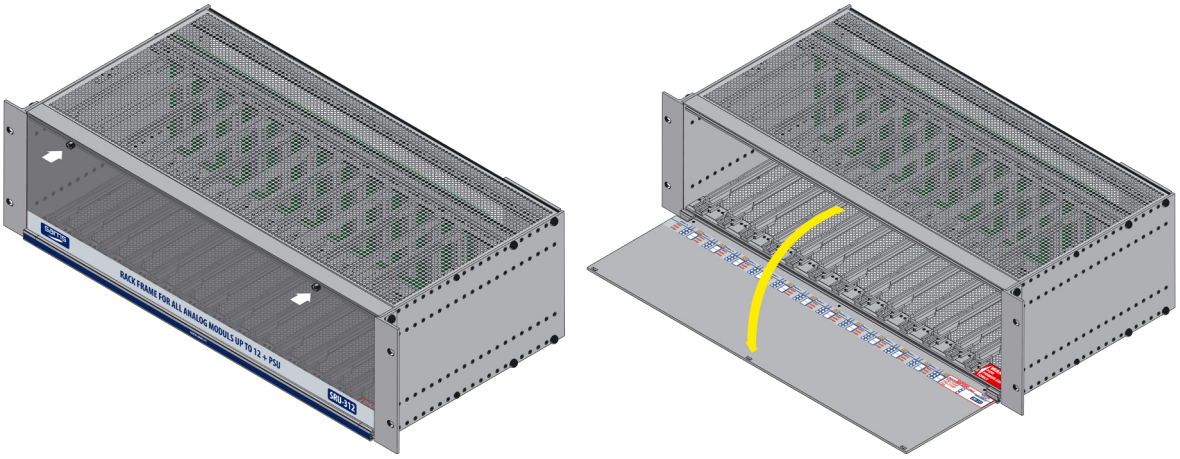
BLOCK DIAGRAM



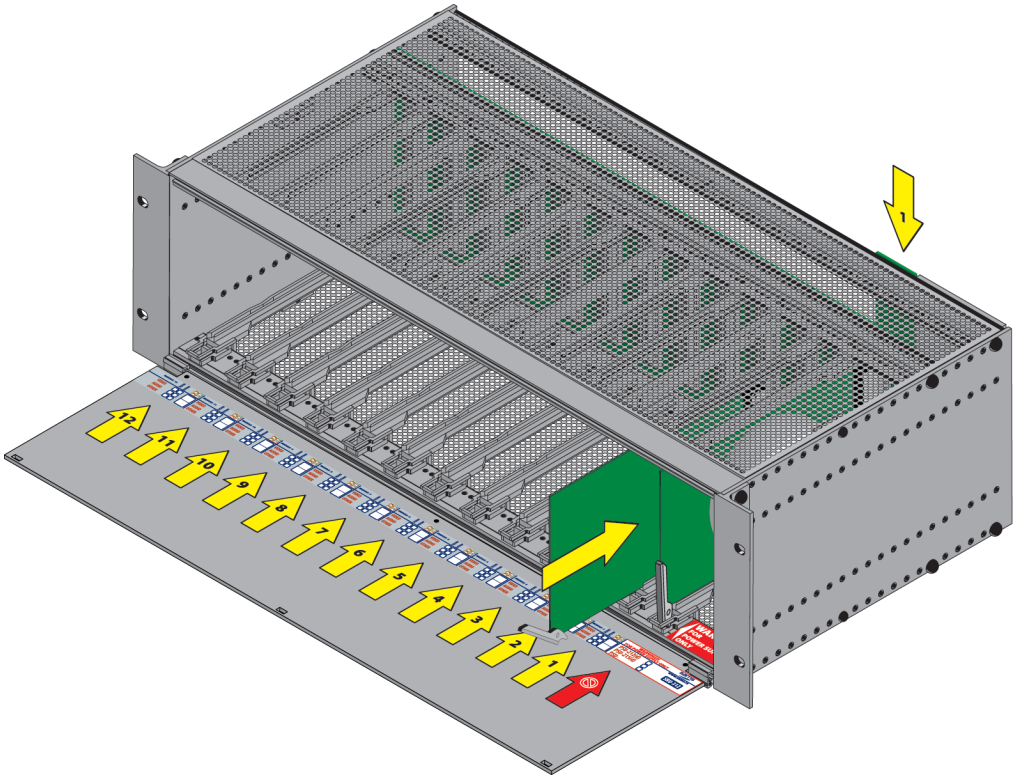
ORDERING INFORMATION

Code	Name	Description
001.216	VA-104	Analog video DA 1x6
001.502	CV-6	Back connector
001.600	SRU-312	Rack frame for 12 modules
001.601	SRU-310	Rack frame for 10 modules
001.605	SRU-306	Rack frame for 6 modules

MODULE INSTALATION IN SRU RACK FRAMES



- On the front side of rack frame, unscrew the screws.
- Open the door.



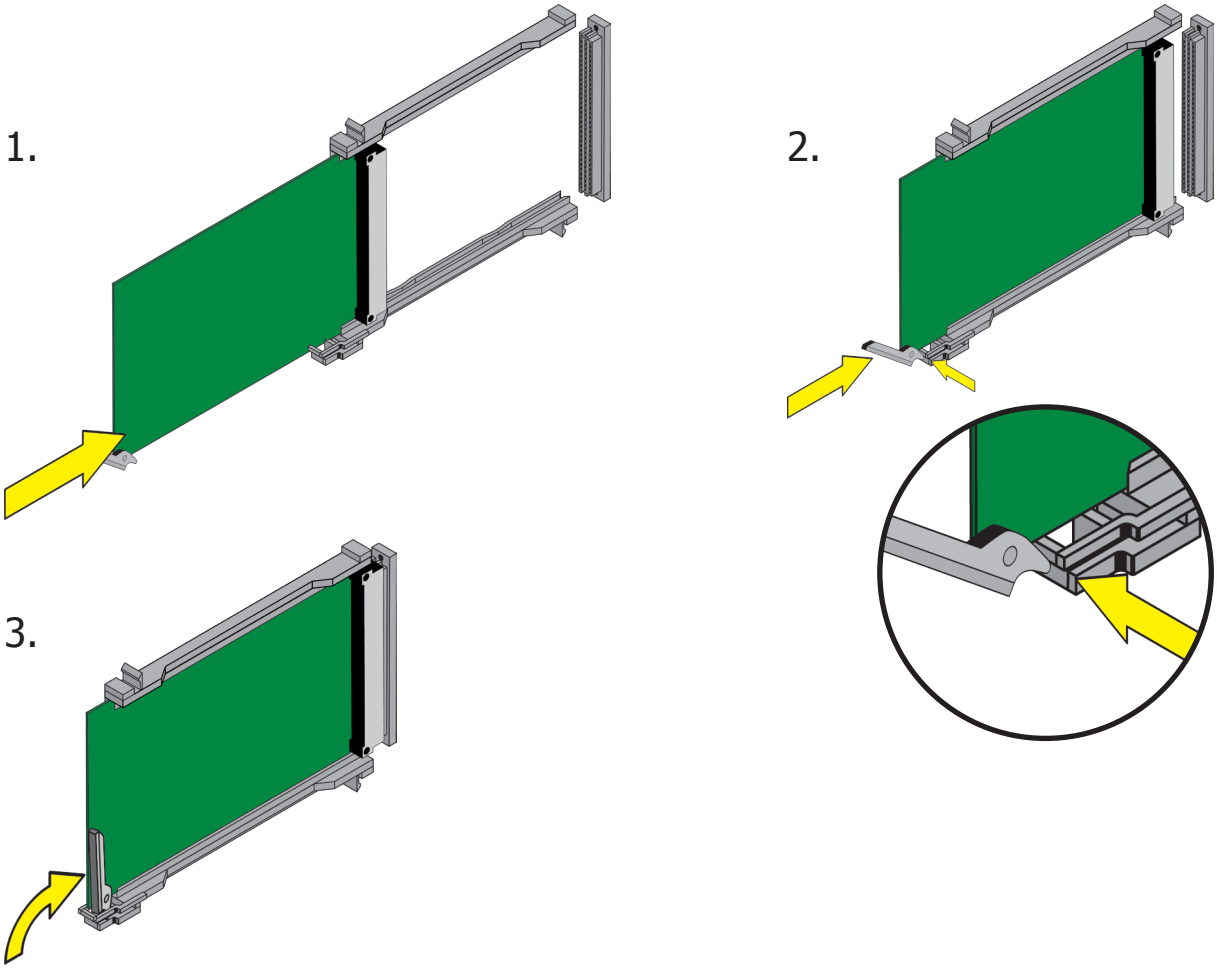
Make sure that the module is set to the correct place in relation to the back connector.

BEFORE INSTALLING OR REMOVING THE MODULE FROM SRU, ALWAYS TURN OFF THE POWER

Lock module with lever to the position.

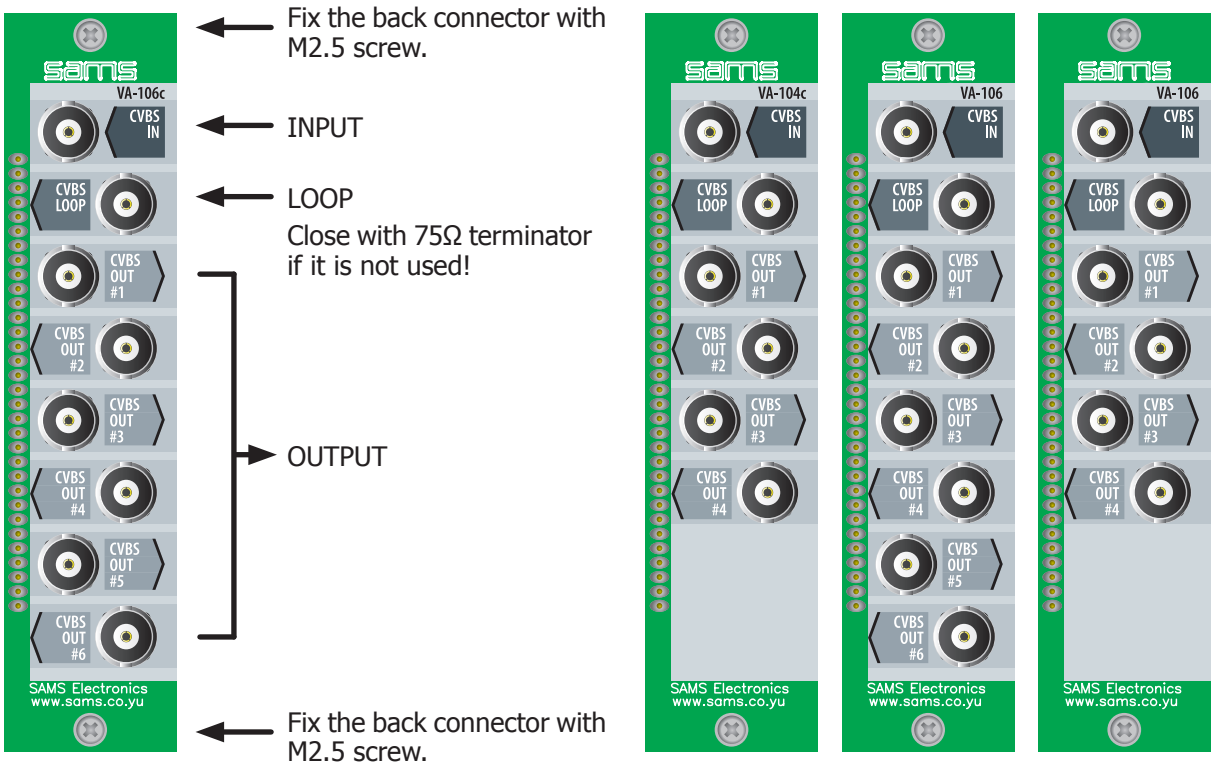
NOTE: NEVER PLACE MODULE TO PLACE OF THE POWER SUPPLY MODULE!

The label that indicates the place for power supply module



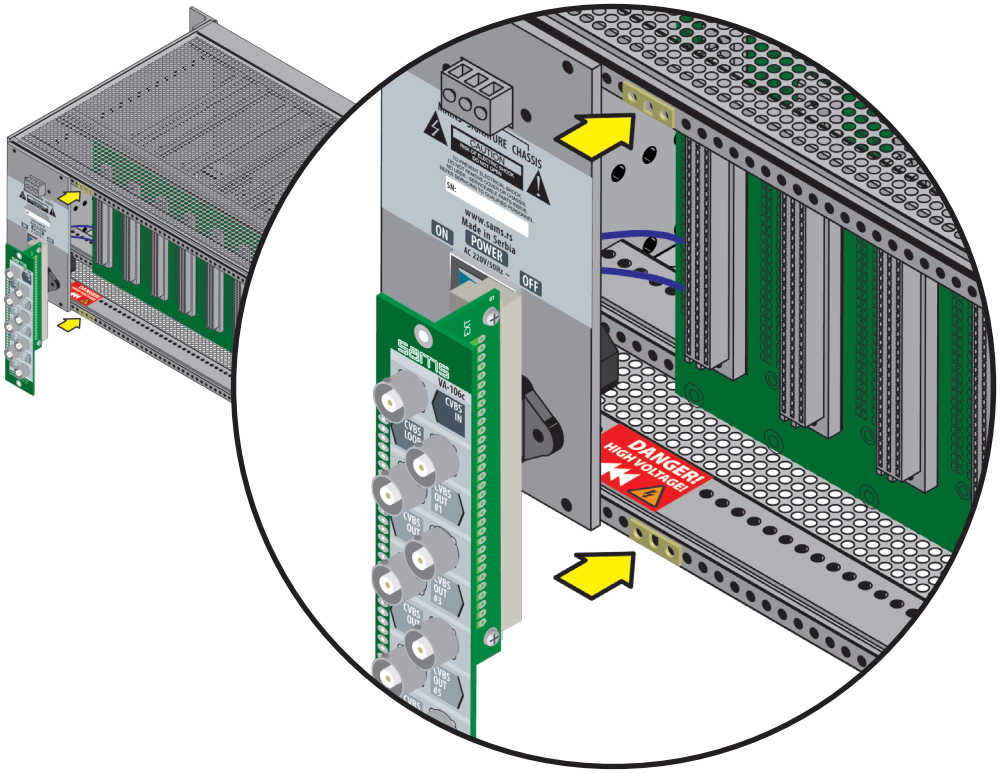
1. The module set between the guides (not metal plate).
2. Locking lever mount behind the groove.
3. Push the lever to lock in an upright position. The module is locked.

BACK CONNECTORS

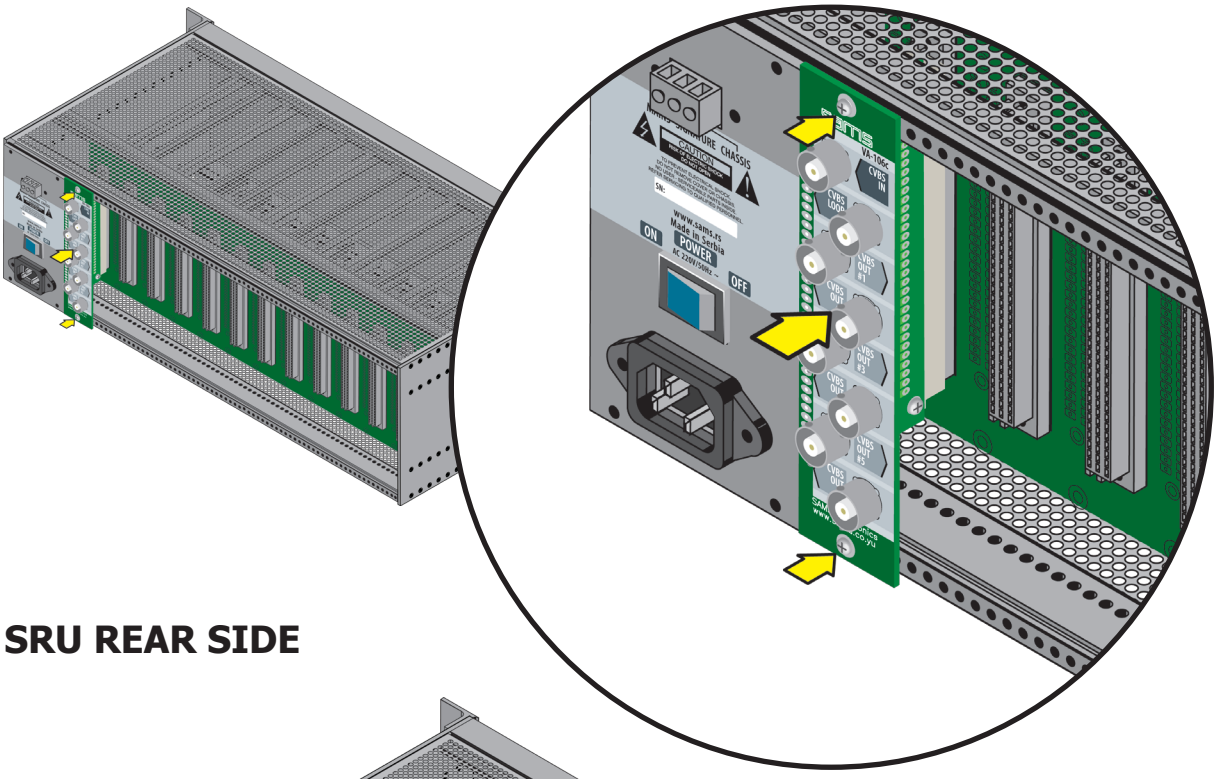


VA-106c VA-106 VA-104c VA-104

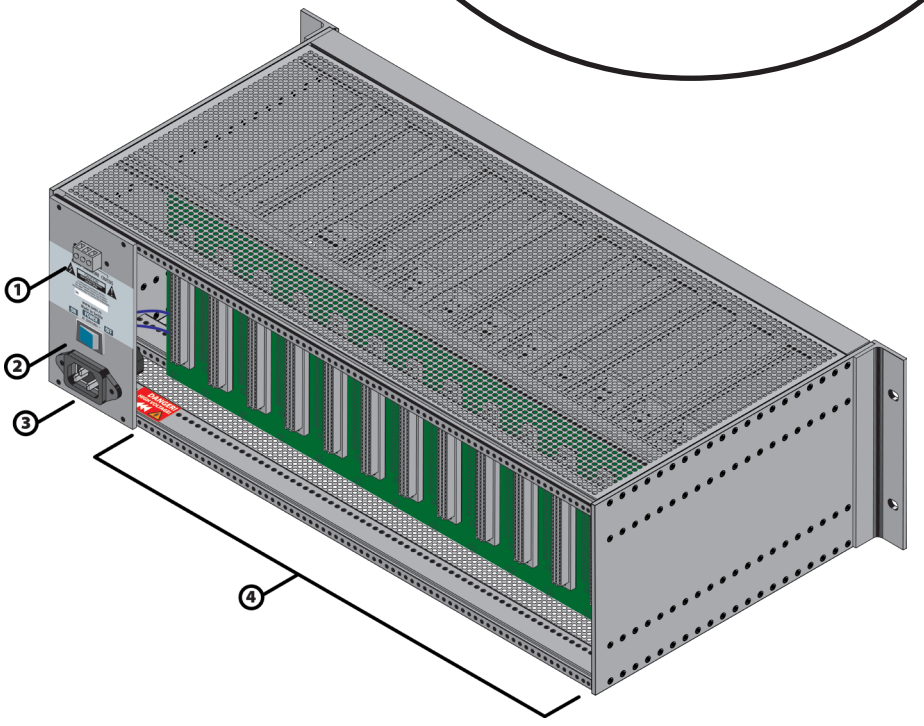
Be sure to install a protective pad before installing the back connectors.



Place the back connector. Fix the back connector with M2.5 screw.



SRU REAR SIDE



Rear side view

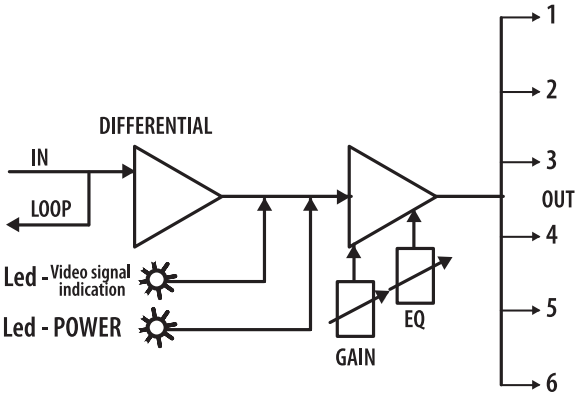
1. Mass
2. Power switch
3. The socket
4. Connections for back connectors

DO NOT INSERT SHARP METAL OBJECTS OR FINGERS INTO THE SPACE BEHIND THE POWER PANEL!

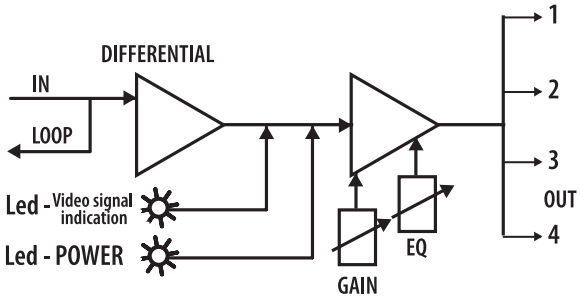
THE SIGN "LIGHTNING IN A TRIANGLE" IS TO ALERT THE USER TO THE PRESENCE OF LIFE-THREATENING HIGH POWER.

LABEL IS PLACED NEXT TO POWER PANEL.

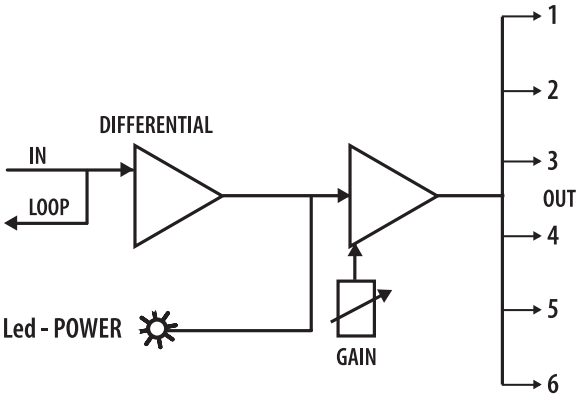
BLOCK DIAGRAM



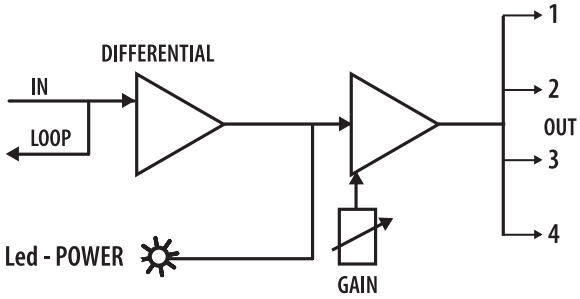
VA-106c



VA-104c

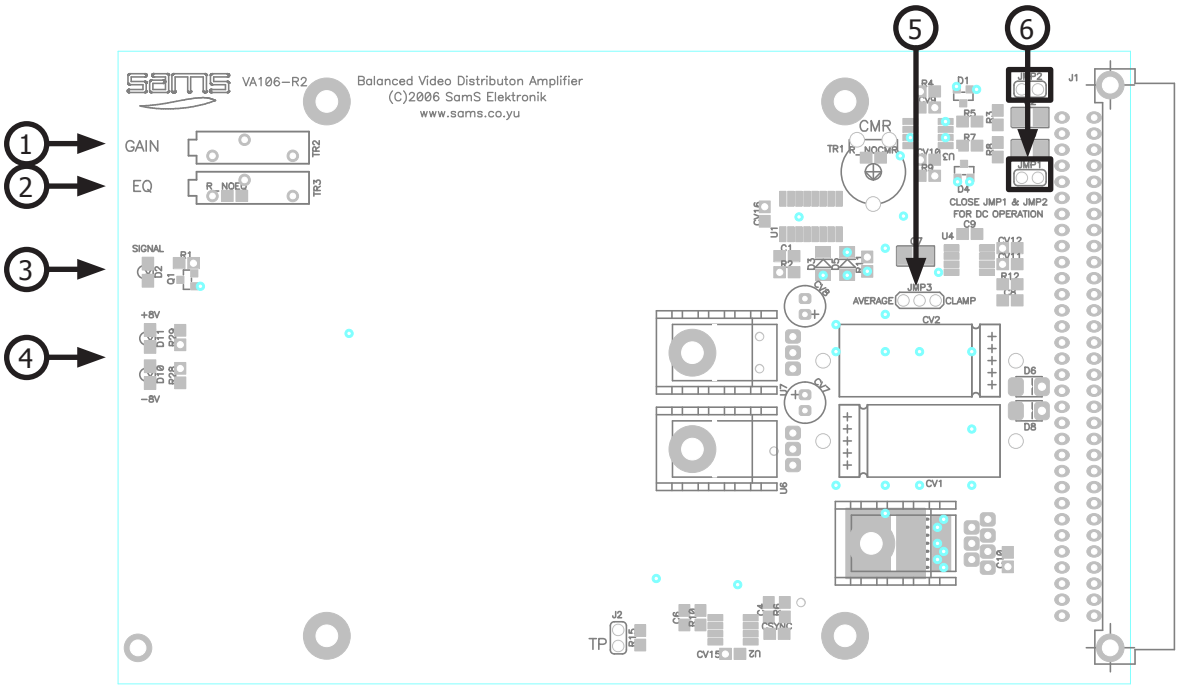


VA-106



VA-104

PCB WITH THE LAYOUT OF ELEMENTS



1) GAIN - Trimer to correct the overall level of video signals. Allows gain correction of ± 3dB.
2) EQ (only on VA-106c and VA-104c) - Electronic compensation process of loss of high frequencies that occur on long cables. Allows correction of up to 300m with Belden 8281 cable.
3) Indication of the presence of an incoming video signal (only on VA-106c and VA-104c). LEDs light up when a signal is present.
4) LEDs to indicate the presence of power. Light up when power is present.

AVERAGE CLAMP
AVERAGE CLAMP

5) AVERAGE or CLAMP - This option allows the distribution used in component signals. In composite (CVBS) signal and the component containing information on the sink (Y, GREEN), jumper set to CLAMP. For component signals containing color difference (C, RY, BY, RED, BLUE), set the jumper on AVERAGE.

6) DC COUPLING - Close JMP1 and JMP2 places for DC coupling. This applies to systems that know voltage levels. The factory setting is no jumpers.

ADJUSTMENT

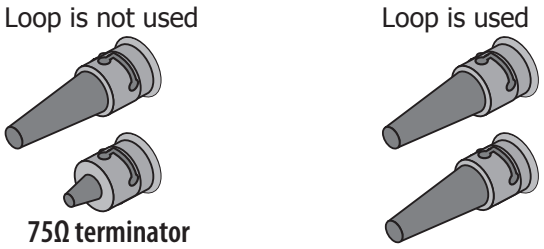
Video distribution is factory set to (GAIN) 1V p-p ± 5% @ 75% Color Bar test. EQ is set to minimum. For adjust is used 1m cable.

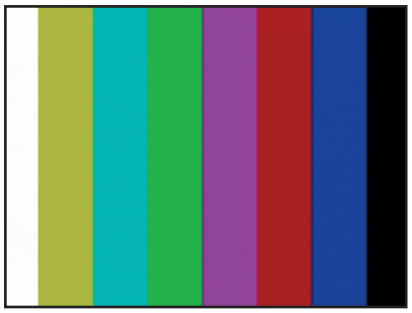
To adjust the distribution in the system, it is necessary to have:
- Signal generator (a signal which is brought to the input of the distribution)
- Adequate measuring instrument (output signal of the distribution)
- A small flathead screwdriver (for adjusting)

1) Start test "75% Color bar". Using a measuring instrument, note whether there is a deviation. Slowly turn the GAIN potentiometer (1) to adjust the signal level at 1V p-p.
2) EQ is the process of adjusting the balance between the levels of different frequencies in the video signal. Due to the length of the cable, it will weaken the level of higher frequencies. Start Multiburst test. Using a measuring instrument, note whether there is a deviation. Slowly turn the EQ potentiometer (2) to ensure consistency across all frequency amplification.

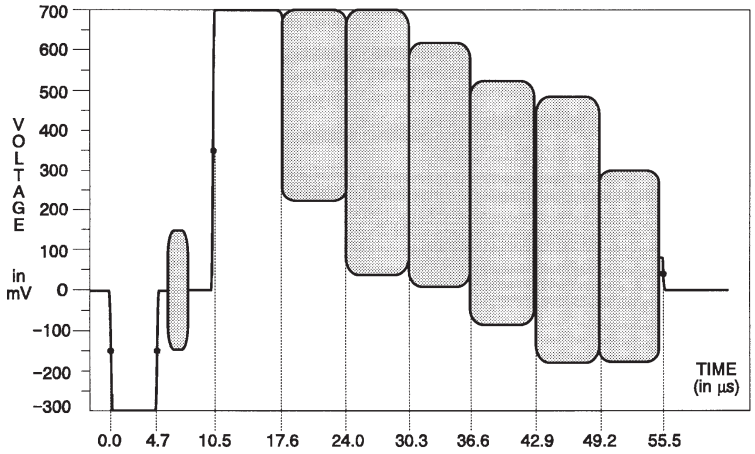
REMARKS

Loop must be closed with 75Ω terminator if not used.
Loop is used to pass incoming signal back into the system without adjustment. All corrections levels and EQ of signal relating only on outputs.

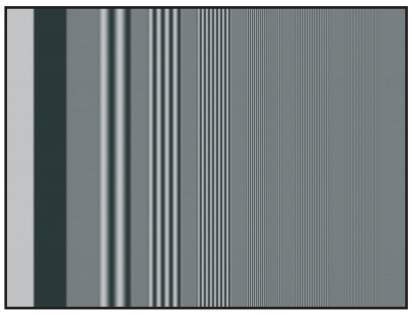




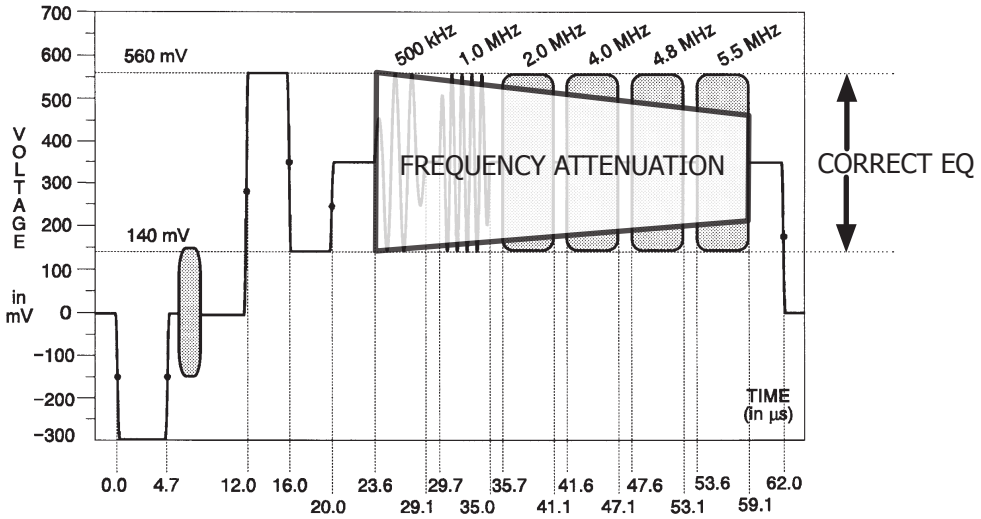
Test 1: 75% Color Bar for GAIN



Test 1: 75% Color Bar Composite



Test 2: 60% Multiburst for EQ



Test 2: 60% Multiburst Composite

NOTES